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TITLE: Spatial correlation of rain drop size distribution from polarimetric radar and 2D-video disdrometers

PRESENTATION TYPE: Assigned by Committee (Oral or Poster)

CURRENT SECTION/FOCUS GROUP: Hydrology (H)

CURRENT SESSION: H35. Global Precipitation Measurement, Validation, and Applications

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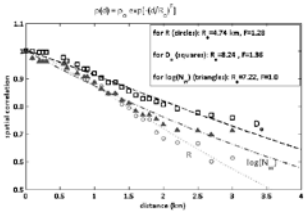
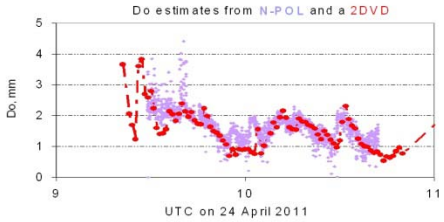
ABSTRACT BODY: Spatial correlations of two of the main rain drop-size distribution (DSD) parameters - namely the median-volume diameter (Do) and the normalized intercept parameter (Nw) - as well as rainfal rate (R) are determined from polarimetric radar measurements, with added information from 2D video disdrometer (2DVD) data. Two cases have been considered, (i) a widespread, long-duration rain event in Huntsville, Alabama, and (ii) an event with localized intense rain-cells within a convection line which occurred during the MC3E campaign. For the first case, data from a C-band polarimetric radar (ARMOR) were utilized, with two 2DVDs acting as 'ground-truth', both being located at the same site 15 km from the radar. The radar was operated in a special "near-dwelling" mode over the 2DVDs. In the second case, data from an S-band polarimetric radar (NPOL) data were utilized, with at least five 2DVDs located between 20 and 30 km from the radar. In both rain event cases, comparisons of Do, log10(Nw) and R were made between radar derived estimates and 2DVD-based measurements, and were found to be in good agreement, and in both cases, the radar data were subsequently used to determine the spatial correlations For the first case, the spatial decorrelation distance was found to be smallest for R (4.5 km), and largest fo Do (8.2 km). For log10(Nw) it was 7.2 km (Fig. 1). For the second case, the corresponding decorrelation distances were somewhat smaller but had a directional dependence. In Fig. 2, we show an example of Do comparisons between NPOL based estimates and 1-minute DSD based estimates from one of the five 2DVDs.





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